INDIANA DEPARTMENT OF TRANSPORTATION
OFFICE OF MATERIALS MANAGEMENT

PROCEDURE FOR BENCH TESTING, FIELD TESTING, AND APPROVAL LIST REQUIREMENTS FOR ITS AFP CONTROLLERS
ITM No. 949-15P

1.0 SCOPE.

1.1 This test procedure covers the methods that a AFP Controller is evaluated in the field, and is placed, maintained, or removed from an approval list.

1.2 This ITM may involve hazardous materials, operations, and equipment and may not address all of the safety problems associated with the use of the test method. The user of the ITM is responsible for establishing the appropriate safety and health practices and for determining the applicability of regulatory limitations prior to use.

2.0 REFERENCES.

2.1 Indiana Standards.

806 Approval List Requirements

2.2 NTCIP Standards.

1103 NTCIP Transportation Management Protocol (TMP)
9012 NTCIP Testing Guide for Users

3.0 TERMINOLOGY. Definitions for terms and abbreviations shall be in accordance with the Department's Standard Specifications, Section 101 and NEMA TS-2 Section 1.

4.0 SIGNIFICANCE AND USE. This ITM is used to evaluate, approve, maintain approval, and remove from the approval listing an AFP Controller which is placed on the Department's List of Approved Traffic Signal and ITS Control Equipment. Each model of the AFP Controller will be bench tested and field tested separately.

5.0 APPARATUS.

5.1 Complete ITS fully functional system

6.0 SAMPLING. The manufacturer shall furnish, at no cost to the Department; one randomly selected production-run AFP Controller of each model for bench testing and field testing.

7.0 PROCEDURE.

7.1 The manufacturer of the material shall submit the Preliminary Product Material Evaluation Form (Appendix A) for each model type of AFP Controller which the manufacturer is requesting to be added to the listing.

7.2 The manufacturer of the material shall submit with the Evaluation Form the following:

7.2.1 An invoice showing an initial zero dollar amount ($0.00) for the use of the evaluation sample material during the evaluation. The invoice shall also list the deferred cost of the material that the Department would pay if the material is purchased instead of returned upon the successful completion of the evaluation.

7.2.2 A certification of environmental testing shall be furnished with each major unit approval request indicating the unit has been tested and is in accordance with the environmental requirements from NTCIP. The certification shall specify the model and serial number of the AFP Controller tested. A complete log of each test shall be provided to the Department and will be maintained by the Department. The log shall indicate which, if any, component failed during the test, when the component failed, and the steps taken to repair the AFP Controller. The log shall include the date of testing, name and title of person conducting the tests, a record of conditions throughout the tests, and a temperature and humidity verses time chart. The maximum report interval of any chart shall be 24 h. The chart shall be from a recording machine used to monitor the status of the environmental chamber during testing.

7.2.3 Operation and Maintenance Manual(s), including theory of operation, schematics and components parts listing

7.2.4 One randomly selected production run AFP Controller for bench testing and field testing

7.2.5 List of required software and any additional items required to realize the full potential of the product

8.0 SUBMITTAL REVIEW. The documentation, including the environmental testing, will be reviewed for usability of the AFP Controller with Department approved NTCIP based ITS system in Indiana. The manufacturer's recommended schedule and extent of maintenance will be reviewed for acceptability.

9.0 BENCH TESTING. The AFP Controller will be bench tested for compatibility with all ITS equipment assemblies used by the Department. The AFP Controller will be verified for full NTCIP functionality and full manufacturer's claimed optional functionality.

10.0 FIELD TESTING. The field testing of the AFP Controller will consist of installing the AFP Controller in an actual ITS cabinet for a period of up to 12 months to monitor the following:.

10.1 A log of any failures for the AFP Controller

10.2 The relative ease of use for the field personnel

10.3 Overall build quality and expected lifecycle of the AFP Controller. The build quality and expected lifecycle shall be comparable with existing AFP Controllers.

11.0 REPORT. A final report will include the notations and findings from the electronic bench test and field testing results and documentation.

12.0 APPROVAL LIST

12.1 Approval of AFP Controller. The AFP Controller model may be placed on the approval list when the following conditions are met:

12.1.1 A potential net benefit to the Department is realized by inclusion of the item on the approved list.

12.1.2 The unit passes the NTCIP environmental requirements .

12.1.3 The required documentation is submitted.

12.1.4 The bench and field testing are completed with satisfactory results.

12.1.5 No excessive amount of routine or periodic maintenance is required.

12.1.6 There are no failures with any of the different types of ITS assemblies or individual components used by the Department.

12.1.7 All manuals, documents, and required software to realize the full potential of AFP Controller are submitted.

12.1.8 Only minimal maintenance operations were necessary during the field testing.

12.2 Maintaining Approval.

12.2.1 The ITS Technology Deployment Division of TMBU shall be notified each time any update or revision is made, and an explanation of the benefits of the change shall be submitted. Operations Support Division will determine if and to what extent a revision is to be placed into field operation and may fully re-evaluate the AFP Controller with the revision.

12.2.2 If the manufacturer makes any changes to an approved model to correct a non-NTCIP compliant or safety issue, the Department shall be notified immediately. The manufacturer shall correct all existing equipment purchased by the Department either directly, by contract, or through agreement prior to the change being incorporated at the manufacturer's production level.

12.2.3 A design change to an approved model shall require a submittal of documented changes. At the discretion of the Department, resubmission of the model for testing and evaluation may be required. Permanent addition or removals of component parts or wires, printed circuit board modifications, or revisions to memory or processor software, are examples of items that are considered to be design changes.

12.3 Removal from Approval List. AFP Controller will be removed from an approval list for, but not limited to, the following reasons:

12.3.1 Changes in the AFP Controller components or production process that fail testing and/or evaluation

12.3.2 If three consecutive years elapse without furnishing the AFP Controller

12.3.3 Performance of the AFP Controller no longer meets the intended purpose

12.3.4 Recurring similar product failures indicate a manufacturer's defect

INDIANA DEPARTMENT OF TRANSPORTATION
DIVISION OF OPERATIONS SUPPORT
PRELIMINARY INFORMATION FOR PRODUCT MATERIAL EVALUATION

Trade Name _____ Date _____

Manufacturer _____ Patented? Yes _____ No _____ Applied for _____

Address _____
Street No (P. O. Box) City State Zip Code

Representative _____ Phone No ( )_____

Address _____
Street No (P. O. Box) City State Zip Code

Product Information _____

_____

Materials Composition _____

_____

_____

** Is this product considered HAZARDOUS MATERIAL when disposing of non-used or surplus materials? Yes _____ No _____

** What is the shelf life of this material? Years _____Months _____N/A_____

Recommended Use-Primary _____

_____

_____

Recommended Use-Alternate _____

_____

_____

Advantages and/or Benefits _____

_____

_____

** Materials specifications by manufacturer, installation/operation manual, maintenance manual, literature, test results, guarantee, hazardous material data sheets, plan, picture or sketch must be submitted with this form. In the case of electronic devices the schematic diagram, parts list, and parts layout diagram must be submitted for each printed circuit board within the device.

Meets following specifications:

AASHTO _____ _____

ASTM _____ _____

OTHER _____

Use by highway authorities or similar agencies in other states.

Agency	Years Used	Remarks
_____	_____	_____
_____	_____	_____
_____	_____	_____

** Has product ever been evaluated by and rejected for use by a governmental agency?

Yes _____ No _____ If yes, by what agency and for what reason?

_____

_____

Will demonstration be provided? Yes _____ No _____

Availability: Seasonal _____ Nonseasonal _____ Delivery at site _____

After receipt of order, are quantities limited? Yes _____ No _____

** Will FREE SAMPLES be furnished? Yes _____ No _____
If yes, Quantity Furnished _____

** If the sample is salvageable, do you desire to have it returned Yes _____ No _____

(Desired return of salvageable samples will be at the supplier's expense.)
(The manufacturer agrees upon the return of salvageable samples, such samples may be damaged or non-operable. Normal care will be taken that the samples, when returned, are in operable condition; INDOT, however, does not guarantee that the returned samples are operable.)

Will laboratory analysis be furnished? Yes _____ No _____

** Approximate cost _____ Royalty Cost _____

When was the product introduced to the market? _____

This product is an alternate for what product? _____

_____

_____

Will warranty be provided? Yes _____ No _____ If yes, for how long? _____

Background of company, including principal products _____

_____

_____

_____

What offices of the Indiana Department of Transportation have been contacted?

_____

Additional Information _____

_____

_____

_____

(Attach additional sheets as necessary)

Person furnishing information _____
Name Title

Address _____
Street No (P. O. Box) City State Zip Code

Items marked ** MUST BE RESPONDED TO or further consideration may not be given for this product.

Please mail this form to: Manager, Office of Traffic Engineering
100 N. Senate Ave., Room N925
Indianapolis, IN 46204-2249

If INDOT elects to evaluate your product/material - traffic signal equipment will be shipped to:

Electronic Technician 1
Indiana Department of Transportation
7701 East Melton Road
Gary, IN 46403

While all other materials to be evaluated will be shipped to:

ITS Field Engineer
Indiana Department of Transportation
8620 East 21st Street
Indianapolis, IN 46219